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Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Paul T. Spivey et al.

Ser. No. 10/755,939 / 775,939

Group Art Unit: 2861

Filed: February 10, 2004

For: **INKJET PRINTHEAD
PACKAGING TAPE FOR
SEALING NOZZLES**

Examiner: Lisa Solomon

APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Sir:

Responsive to the Office Action of June 15, 2006, the Applicant hereby appeals the final rejection of claims 1-11, 13-18, 20, 21 and 23-25. Claims 1-29 are pending. Claims 12, 19 and 22 have been indicated as allowable but rejected for dependence on a rejected base claims. Claims 26-29 have been allowed. Also, a fee transmittal indicating payment of the Appeal Brief Fee in the amount of \$500.00 accompanies this paper according to 37 C.F.R. §41.20(b)(2). A Notice of Appeal and attendant Notice of Appeal fee, in the amount of \$500.00 according to 37 C.F.R. §§41.20(b)(1), was earlier filed on July 19, 2006 and received by the Patent Office on July 24, 2006, according to the date stamp on the returned postcard. It is believed no additional fees are due and the brief is timely.

I. Real Party in Interest

The real party in interest is Lexmark International, Inc., a corporation of the State of Delaware, having a principal place of business at 740 West New Circle Road, Lexington, Kentucky 40550.

II. Related Appeals and Interferences

The Appellant knows of no other prior or pending appeals, interferences, or judicial proceedings, which may be related to, directly affect, or be directly affected by, or have a bearing on, the Board's decision in this Appeal.

III. Status of Claims

Claims 1-29 are pending. Claims 1-11, 13-18, 20, 21 and 23-25 stand finally rejected under 35 U.S.C. §103(a) as obvious in view of Reid U.S. Patent No. 5,414,454 alone or in combination with Farr U.S. Patent No. 6,634,732. Claims 12, 19 and 22 have been indicated as allowable but rejected for dependence on a rejected base claims. Claims 26-29 have been allowed. On appeal, the Appellant traverses the rejections of the claims, especially claims 1, 6-10, 15-18 and 21. Of those, claims 1, 7, 15 and 21 are independent.

IV. Status of Amendments

No amendment has been filed subsequent to the Final Office Action dated June 15, 2006 and all previous amendments have been entered. The form of the claims for purposes

of appeal are those presented in the Amendment filed by the Appellant on April 13, 2006 (received by the Patent Office on April 18, 2006, as indicated by the date stamp on the return postcard). As required, a copy of the claims is included herewith in Appendix form with double-spacing format.

V. Summary of Claimed Subject Matter

Claims 1-29 are pending. Claims 1-11, 13-18, 20, 21 and 23-25 stand rejected. Of those, claims 1, 7, 15 and 21 are independent. The rejected independent claims and dependent claims 6, 8-10 and 16-18 are argued particularly relative to the cited art.

The present invention relates broadly to "to inkjet printheads. In particular, it relates to packaging tapes sealed over printhead nozzle plates, in turn, disposed on printhead heater chips. In one aspect, it relates to packaging tape shape and orientation that enables encapsulant beads to occupy nozzle plate area relative to nozzle holes closer than heretofore known. In another aspect, it relates to enabling shrinking heater chip size to save on silicon costs." *Appellant's Specification*, p. 1, ll. 4-10.

As indicated throughout the Appellant's Background of the Invention section (relative to prior art Figures 1 and 2), it is appreciated that prior art printheads sealed nozzle holes 16 with packaging tape 14 "to prevent ink leakage during shipping and handling." *Appellant's Specification*, p. 1, ll. 25-26. However, because of the relative size and poor positioning of adjacent encapsulant beads 18, the tape tended to tent up and away from otherwise sealed nozzle holes 16 in regions labeled 20 which eventually "cause[d] printheads to leak." *Appellant's Specification*, p. 1, l. 30. Appreciating tolerance issues abound in applying encapsulant beads, and accurately placing nozzle holes per thousands of printheads, or more, "producers of inkjet printheads often create[d] large-as-necessary distances d1, d2 between

the edge of the nozzle holes and the edge of the encapsulant bead,” when making printheads, to accommodate the tolerances.” *Appellant’s Specification*, p. 2, ll. 7-10.

However, the instant invention overcomes the prior problems by creating “packaging tape” 11 with “shapes and orientations that allow encapsulant beads to occupy nozzle plate areas closer to nozzle holes than heretofore known. In turn, **manufacturers can shrink the size of their heater chips and save on silicon costs.**” *Bold added, Appellant’s Specification*, p. 2, ll. 26-29. Representatively, Figure 4A shows one example of a shaped tape 11 relative to sealed nozzle holes 23 so that “the encapsulant beads 25 may now overlies a periphery of the nozzle plate and encroach upon the nozzle holes in shorter distances heretofore known without negative repercussions of the encapsulant beads causing tenting of the tape relative to the nozzle plates, especially the lifting of the tape and the unsealing of the nozzle holes 23.” *Appellant’s Specification*, p. 10, ll. 6-10. In Figures 3A-3D, certain specific representations of tapes 11 are shown that fit the above description. The tape also has a periphery that may or may not “touch any portion of the encapsulant bead.” *Appellant’s Specification*, p. 11, ll. 9-10.

In this manner, the encapsulant beads can now have leading edges 61 (e.g., Figures 6A, 6B, and 6C) extending toward the nozzle holes 23, in a direction away from a periphery 65 of a nozzle plate 21. Because “the taping of nozzle holes relative to encroaching encapsulant beads no longer serves as a limit [e.g., tenting] on the heater chip,” (*Appellant’s Specification*, p. 11, ll. 21-22), the leading edge can “become closer to any of the nozzle holes 23 than previously known.” *Appellant’s Specification*, p. 11, ll. 15-16. The edges may also have irregular boundaries 69 or not. Distances from the leading edge to the nozzle holes is also preferably given as “straight line distance of the leading edge 61 to the closest nozzle 71 or 73 corresponds to the preferred distance D1 of Figure 5a.” *Appellant’s Specification*, p. 11, ll. 30-31. “Of course, if the heater chip and nozzle plate have an orientation such that

the length of the encapsulant bead 25 resides transverse to the row of nozzles as seen in Figure 6b, the closest nozzle hole to the leading edge 61 would correspond to nozzle hole 67. The distance D1 would then be equal to or longer than the distance Y shown.” *Appellant’s Specification*, p. 12, ll. 3-7.

Even Further,:

the nozzle plate 21 [in Figure 6C] is shown with all of the nozzle holes 23 sealed by a narrow-width portion 13 of a tape 11. A distance 81 exists between an edge 83 of the tape and a closest nozzle hole 23-1 of about 50 microns or more. A second distance 85 exists between the edge 83 of the tape and the leading edge 61 of the encapsulant bead of about 100 to about 450 microns. A third distance 87 between the periphery 65 of the nozzle plate and the leading edge is about 100 to about 200 microns. A preferred nominal width 91 of the encapsulant bead 25 from a trailing edge 89 to the leading edge 61 is about 200 to about 400 microns. *Appellant’s Specification*, p. 12, ll. 8-16.

Consistent with the foregoing, including reference to Appellant’s Figures 3A-6C and 8, for example, the below-limitations of the claims, in bold, are representatively found in the specification at the parenthetical cite as follows:

1. **An inkjet printhead having a body** (“With reference to Figure 8, an inkjet printhead of the present invention to-be-packaged with a nozzle hole sealing tape is shown generally as 101. The printhead 101 has a housing 127 formed of a lid 161 and a body 163... *Appellant’s Specification*, p. 5, l. 29 - p. 6, l. 13-4.), **comprising:**

a heater chip attached to said body (“During printhead manufacturing, the heater chip 251 preferably attaches to the housing with any of a variety of adhesives, epoxies, etc., well known in the art.” *Appellant’s Specification*, p. 7, ll. 3-4.);

a nozzle plate on said heater chip, said nozzle plate having a periphery and plurality of nozzle holes (“A nozzle plate, shown in other figures, with pluralities of nozzle holes adheres over or is fabricated with the heater chip during thin film processing such that the nozzle holes align with the heaters for ejecting ink during use.” *Appellant’s Specification*, p. 7, ll. 11-13; and “In a more detailed planar view with reference to Figure 6a, the encapsulant bead 25 overlies a periphery 65 of the nozzle plate 21...” *Appellant’s Specification*, p. 11, ll. 26-27.); and

an encapsulant bead on said nozzle plate having a leading edge in a direction away from said periphery, said leading edge being less than about 500 microns from a closest one of said plurality of nozzle holes (“In a more detailed planar view with reference to Figure 6a, the encapsulant bead 25 overlies a periphery 65 of the nozzle plate 21...” *Appellant’s Specification*, p. 11, ll. 26-27; “In Figure 6c, the nozzle plate 21 is shown with all of the nozzle holes 23 sealed by a narrow-width portion 13 of a tape 11. A distance 81 exists between an edge 83 of the tape and a closest nozzle hole 23-1 of about 50 microns or more. A second distance 85 exists between the edge 83 of the tape and the leading edge 61 of the encapsulant bead of about 100 to about 450 microns.” *Appellant’s Specification*, p. 12, ll. 8-12. In turn, skilled artisans will appreciate a distance exists between the leading edge 61 and a closest one of the nozzles and is arrived at by adding distance 81 and distance 85 together. In this regard, 50 microns (distance 81) plus 100 or 450 microns (distance 85) results in a distance from the leading edge 61 to a closest nozzle 23-1 of about 500 microns (50 microns plus 450 microns) or less (50 microns plus 100 microns).).

6. The inkjet printhead of claim 1, further including a tape on said nozzle plate, said tape overlying each of said plurality of nozzle holes, said tape not touching said encapsulant bead (“In Figure 6c, the nozzle plate 21 is shown with all of the nozzle

holes 23 sealed by a narrow-width portion 13 of a tape 11.” *Appellant’s Specification*, p. 12, ll. 8-9; and “In this manner, the encapsulant beads 25 may lie on the nozzle plate and encroach upon the nozzle holes without the negative repercussions of tape tenting. It is also shown [in Figure 4B] that the tape periphery does not ever extend beyond the nozzle plate periphery and that no portion of either encapsulant bead 25 touches any portion of the tape 11. This, however, is not an absolute requirement to practice the invention.” *Appellant’s Specification*, p. 10, ll. 23-28. Alternatively, “the encapsulant bead [in Figures 5A and 5B] follows the contour of the dashed line 43 or other. The tape 11 overlies the surface of the nozzle plate 21 and seals the nozzle holes 23 shut for shipping. Preferably, the periphery of the tape does not touch any portion of the encapsulant bead. *Appellant’s Specification*, p. 11, ll. 7-10.).

7. An inkjet printhead having a body (“With reference to Figure 8, an inkjet printhead of the present invention to-be-packaged with a nozzle hole sealing tape is shown generally as 101. The printhead 101 has a housing 127 formed of a lid 161 and a body 163... *Appellant’s Specification*, p. 5, l. 29 - p. 6, l. 13-4.), comprising:

a heater chip on said body (“During printhead manufacturing, the heater chip 251 preferably attaches to the housing with any of a variety of adhesives, epoxies, etc., well known in the art.” *Appellant’s Specification*, p. 7, ll. 3-4);

a nozzle plate on said heater chip, said nozzle plate having a periphery and plurality of nozzle holes (“A nozzle plate, shown in other figures, with pluralities of nozzle holes adheres over or is fabricated with the heater chip during thin film processing such that the nozzle holes align with the heaters for ejecting ink during use.” *Appellant’s Specification*, p. 7, ll. 11-13; and “In a more detailed planar view with reference to Figure 6a, the encapsulant bead 25 overlies a periphery 65 of the nozzle plate 21...” *Appellant’s*

Specification, p. 11, ll. 26-27.); and

an encapsulant bead on said nozzle plate and overlying said periphery, said encapsulant bead having a leading edge in a direction away from said periphery and toward said plurality of nozzle holes, said leading edge being less than about 400 microns from a closest one of said plurality of nozzle holes (“In a more detailed planar view with reference to Figure 6a, the encapsulant bead 25 overlies a periphery 65 of the nozzle plate 21...” *Appellant’s Specification*, p. 11, ll. 26-27; “In Figure 6c, the nozzle plate 21 is shown with all of the nozzle holes 23 sealed by a narrow-width portion 13 of a tape 11. A distance 81 exists between an edge 83 of the tape and a closest nozzle hole 23-1 of about 50 microns or more. A second distance 85 exists between the edge 83 of the tape and the leading edge 61 of the encapsulant bead of about 100 to about 450 microns.” *Appellant’s Specification*, p. 12, ll. 8-12. In turn, skilled artisans will appreciate a distance exists between the leading edge 61 and a closest one of the nozzles and is arrived at by adding distance 81 and distance 85 together. In this regard, 50 microns (distance 81) plus 100 or 450 microns (distance 85) results in a distance from the leading edge 61 to a closest nozzle 23-1 of about 500 microns (50 microns plus 450 microns) or less (50 microns plus 100 microns).).

8. The inkjet printhead of claim 7, further including a tape covering each of said plurality of nozzle holes, said tape not touching said encapsulant bead (“In Figure 6c, the nozzle plate 21 is shown with all of the nozzle holes 23 sealed by a narrow-width portion 13 of a tape 11.” *Appellant’s Specification*, p. 12, ll. 8-9; and “In this manner, the encapsulant beads 25 may lie on the nozzle plate and encroach upon the nozzle holes without the negative repercussions of tape tenting. It is also shown [in Figure 4B] that the tape periphery does not ever extend beyond the nozzle plate periphery and that no portion of either encapsulant bead 25 touches any portion of the tape 11. This, however, is not an absolute

requirement to practice the invention.” *Appellant’s Specification*, p. 10, ll. 23-28. Alternatively, “the encapsulant bead [in Figures 5A and 5B] follows the contour of the dashed line 43 or other. The tape 11 overlies the surface of the nozzle plate 21 and seals the nozzle holes 23 shut for shipping. Preferably, the periphery of the tape does not touch any portion of the encapsulant bead. *Appellant’s Specification*, p. 11, ll. 7-10.).

9. **The inkjet printhead of claim 8, wherein an edge of said tape is more than about 50 microns from any of said plurality of nozzle holes (“A distance 81 [in Figure 6C, for example] exists between an edge 83 of the tape and a closest nozzle hole 23-1 of about 50 microns or more.” *Appellant’s Specification*, p. 12, ll. 9-11.).**

10. **The inkjet printhead of claim 9, wherein said leading edge is in a range from about 100 to about 350 microns from said edge of said tape (“A second distance 85 [in Figure 6C, for example] exists between the edge 83 of the tape and the leading edge 61 of the encapsulant bead of about 100 to about 450 microns.” *Appellant’s Specification*, p. 12, ll. 11-12.).**

15. **An inkjet printhead having a body (“With reference to Figure 8, an inkjet printhead of the present invention to-be-packaged with a nozzle hole sealing tape is shown generally as 101. The printhead 101 has a housing 127 formed of a lid 161 and a body 163... *Appellant’s Specification*, p. 5, l. 29 - p. 6, l. 13-4.), comprising:**

a heater chip on said body (“During printhead manufacturing, the heater chip 251 preferably attaches to the housing with any of a variety of adhesives, epoxies, etc., well known in the art.” *Appellant’s Specification*, p. 7, ll. 3-4.);

a nozzle plate on said heater chip, said nozzle plate having a plurality of nozzle

holes (“A nozzle plate, shown in other figures, with pluralities of nozzle holes adheres over or is fabricated with the heater chip during thin film processing such that the nozzle holes align with the heaters for ejecting ink during use.” *Appellant’s Specification*, p. 7, ll. 11-13; and “In Figure 6c, the nozzle plate 21 is shown with all of the nozzle holes 23... .” *Appellant’s Specification*, p. 12, l. 8.);

an encapsulant bead on said nozzle plate (“In a more detailed planar view with reference to Figure 6a, the encapsulant bead 25 overlies a periphery 65 of the nozzle plate 21...” *Appellant’s Specification*, p. 11, ll. 26-27); and

a tape on said nozzle plate covering each of said plurality of nozzle holes, said tape not touching said encapsulant bead (“In this manner, the encapsulant beads 25 may lie on the nozzle plate and encroach upon the nozzle holes without the negative repercussions of tape tenting. It is also shown [in Figure 4B] that the tape periphery does not ever extend beyond the nozzle plate periphery and that no portion of either encapsulant bead 25 touches any portion of the tape 11. This, however, is not an absolute requirement to practice the invention.” *Appellant’s Specification*, p. 10, ll. 23-28. Alternatively, “the encapsulant bead [in Figures 5A and 5B] follows the contour of the dashed line 43 or other. The tape 11 overlies the surface of the nozzle plate 21 and seals the nozzle holes 23 shut for shipping. Preferably, the periphery of the tape does not touch any portion of the encapsulant bead. *Appellant’s Specification*, p. 11, ll. 7-10.).

16. The inkjet printhead of claim 15, wherein said encapsulant bead has a leading edge less than about 500 microns from said any of said plurality of nozzle holes (“In a more detailed planar view with reference to Figure 6a, the encapsulant bead 25 overlies a periphery 65 of the nozzle plate 21...” *Appellant’s Specification*, p. 11, ll. 26-27; “In Figure 6c, the nozzle plate 21 is shown with all of the nozzle holes 23 sealed by a

narrow-width portion 13 of a tape 11. A distance 81 exists between an edge 83 of the tape and a closest nozzle hole 23-1 of about 50 microns or more. A second distance 85 exists between the edge 83 of the tape and the leading edge 61 of the encapsulant bead of about 100 to about 450 microns." *Appellant's Specification*, p. 12, ll. 8-12. In turn, skilled artisans will appreciate a distance exists between the leading edge 61 and a closest one of the nozzles and is arrived at by adding distance 81 and distance 85 together. In this regard, 50 microns (distance 81) plus 100 or 450 microns (distance 85) results in a distance from the leading edge 61 to a closest nozzle 23-1 of about 500 microns (50 microns plus 450 microns) or less (50 microns plus 100 microns)).

17. **The inkjet printhead of claim 15, wherein an edge of said tape is more than about 50 microns from a closest one of said plurality of nozzle holes** ("In Figure 6c, the nozzle plate 21 is shown with all of the nozzle holes 23 sealed by a narrow-width portion 13 of a tape 11. A distance 81 exists between an edge 83 of the tape and a closest nozzle hole 23-1 of about 50 microns or more." *Appellant's Specification*, p. 12, ll. 8-11.).

18. **The inkjet printhead of claim 15, wherein said encapsulant bead has a leading edge in a range from about 100 to about 350 microns from an edge of said tape** ("A second distance 85 [in Figure 6C, for example] exists between the edge 83 of the tape and the leading edge 61 of the encapsulant bead of about 100 to about 450 microns." *Appellant's Specification*, p. 12, ll. 11-12.).

21. **An inkjet printhead having a body** ("With reference to Figure 8, an inkjet printhead of the present invention to-be-packaged with a nozzle hole sealing tape is shown generally as 101. The printhead 101 has a housing 127 formed of a lid 161 and a body 163...

Appellant's Specification, p. 5, l. 29 - p. 6, l. 13-4.), comprising:

a heater chip on said body ("During printhead manufacturing, the heater chip 251 preferably attaches to the housing with any of a variety of adhesives, epoxies, etc., well known in the art." *Appellant's Specification*, p. 7, ll. 3-4.);

a nozzle plate on said heater chip, said nozzle plate having a periphery and plurality of nozzle holes ("A nozzle plate, shown in other figures, with pluralities of nozzle holes adheres over or is fabricated with the heater chip during thin film processing such that the nozzle holes align with the heaters for ejecting ink during use." *Appellant's Specification*, p. 7, ll. 11-13; "In Figure 6c, the nozzle plate 21 is shown with all of the nozzle holes 23..." *Appellant's Specification*, p. 12, l. 8.);

an encapsulant bead on said nozzle plate and overlying said periphery, said encapsulant bead having a leading edge in a direction away from said periphery and toward said plurality of nozzle holes, said leading edge being less than about 400 microns in a distance perpendicular to said periphery from any of said plurality of nozzle holes ("In a more detailed planar view with reference to Figure 6a, the encapsulant bead 25 overlies a periphery 65 of the nozzle plate 21..." *Appellant's Specification*, p. 11, ll. 26-27; "In Figure 6c, the nozzle plate 21 is shown with all of the nozzle holes 23 sealed by a narrow-width portion 13 of a tape 11. A distance 81 exists between an edge 83 of the tape and a closest nozzle hole 23-1 of about 50 microns or more. A second distance 85 exists between the edge 83 of the tape and the leading edge 61 of the encapsulant bead of about 100 to about 450 microns." *Appellant's Specification*, p. 12, ll. 8-12. In turn, skilled artisans will appreciate a distance exists between the leading edge 61 and a closest one of the nozzles and is arrived at by adding distance 81 and distance 85 together. In this regard, 50 microns (distance 81) plus 100 or 450 microns (distance 85) results in a distance from the leading edge 61 to a closest nozzle 23-1 of about 500 microns (50 microns plus 450 microns) or less

(50 microns plus 100 microns).)); and

a tape on said body and said nozzle plate covering each of said plurality of nozzle holes, said tape not touching said encapsulant bead ("In this manner, the encapsulant beads 25 may lie on the nozzle plate and encroach upon the nozzle holes without the negative repercussions of tape tenting. It is also shown [in Figure 4B] that the tape periphery does not ever extend beyond the nozzle plate periphery and that no portion of either encapsulant bead 25 touches any portion of the tape 11. This, however, is not an absolute requirement to practice the invention." *Appellant's Specification*, p. 10, ll. 23-28. Alternatively, "the encapsulant bead [in Figures 5A and 5B] follows the contour of the dashed line 43 or other. The tape 11 overlies the surface of the nozzle plate 21 and seals the nozzle holes 23 shut for shipping. Preferably, the periphery of the tape does not touch any portion of the encapsulant bead. *Appellant's Specification*, p. 11, ll. 7-10.).

VI. Grounds of Rejection to be Reviewed on Appeal

The Board must determine whether claims 1-11, 13-18, 20, 21 and 23-25 are obvious under 35 U.S.C. §103(a) in view of Reid U.S. Patent No. 5,414,454 alone or in combination with Farr U.S. Patent No. 6,634,732, 944,821. In this regard, the Board must essentially determine whether the references teach what the Examiner suggests they do. Namely, it should be determined: a) whether it is an obvious variant of Reid to dispose a leading edge of an encapsulant bead of a printhead in a direction away from a periphery of a nozzle plate in less than about 500 microns away from a closest one of the nozzle holes of the nozzle plate; b) whether Reid discloses a tape 40 overlying nozzle holes 17 that does not touch an encapsulant bead 20 (e.g., Reid: Figure 4); c) whether the cited *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980) and *In re Aller*, 220 F.2d 454, 105 USPQ 233, (CCPA 1955)

support the Examiner's proposition; and d) whether the Examiner has met her *prima facie* burden.

To the extent the Board's determination finds any of the above in favor of the Appellant, the entirety of the claims should be adjudicated patentable in view of the pending rejections.

VII. Argument

A. The Appellant offers the following preliminary remarks in contemplation of its arguments.

1. Reid U.S. Patent No. 5,414,454

Reid concerns itself with a tape 40 on a print cartridge 10 to cover nozzles 17 for the purpose of preventing leaking. In that the prior art experiences problems of ink leaking 34 by way of tenting or lifting tape, caused by nearby epoxy or encapsulant beads 20, e.g., Figures 1, 2A, 2B and 2C, the solution proffered by Reid consists of cutting parallel slits 46 into an otherwise conventional tape 40 so that "tape 40 is then pressed onto printhead 42 in the direction of arrow 45 in FIG. 3." *Col. 2, ll. 56-57.*

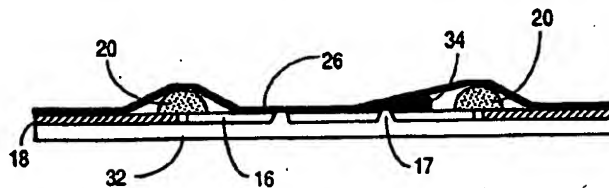


FIG. 2C
(PRIOR ART)

In turn, Figure 4 shows “the center portion of tape 40 between slits 46 remains flush against nozzle plate 16 despite any shrinkage of tape 40, due to the mechanical decoupling of the center portion of tape 40 from the peripheral portions of tape 40 secured to beads 20.”

Col. 2, ll. 59-63. Purportedly, this eliminates nozzles 17 from leaking. Stated differently,:

Two parallel slits are cut in a nozzle tape and aligned with the epoxy protrusions or beads on a printhead. The slits mechanically decouple portions of the tape stuck to the beads from portions of the tape stuck to the nozzle plate, and thereby prevent tape lift-up caused by tension in the tape. *Col. 2, ll. 22-27.*

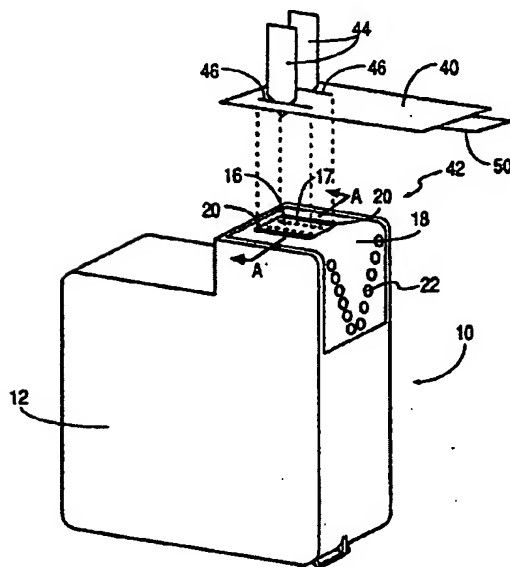


FIG. 3

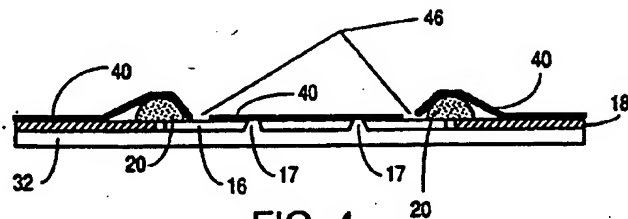


FIG. 4

2. Farr U.S. Patent No. 6,634,732

Farr concerns itself with various numerosity and compositions of layers of a packaging tape for an ink cartridge. In preferred aspects, a thermoplastic polymer film

resides "in contact with and releasably bonded to the nozzles." *Col. 3, ll. 38-39.* Purportedly, this overcomes problems of prior art packaging tape "using a pressure sensitive tape (PSA)." *Col. 1, ll. 37.*

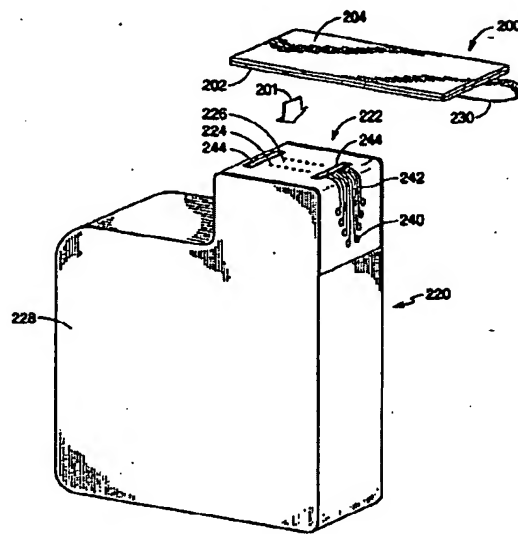


Fig. 2

The patent specifically references Reid for its teaching of the poorly performing, aforementioned PSA, "(see for example U.S. Patent No. 5,414,454)." *Parenthesis in original, col. 1, ll. 37-38.* It also references PSA tapes, such as Reid, as numerously problematic according to the following:

Conventional PSA tapes on the other hand typically seal the inkjet nozzles using a pressure sensitive adhesive. The PSA tape is generally constructed of a base film with an acrylate based pressure sensitive adhesive layer used to seal the nozzles as shown schematically in FIG. 1. The base film is normally made of polyethylene terephthalate commonly referred to as polyester (PET) or polyvinyl Chloride (PVC). The use of thin

PSA tapes has resulted in improving the resistance to environmental variation due to dimensional changes caused by temperature and humidity excursions. PSA tapes have also provided some improvement in durability in regards to vibration; thus, improving upon some of the problems associated with capping devices. However, a PSA tape applied over an irregular surface, such as a protrusion, a stepped structure or a discontinuous surface, can result in the gradual peeling or lifting of the PSA tape resulting in leakage, especially over longer periods of time. The gradual lifting can also result in the formation of an air pocket between the tape and the nozzle plate, allowing ink to flow into this region which will then react or corrode materials such as the encapsulant that protects the electrical traces. Ultimately this may lead to electrical shorts and the print cartridge may fail.

As noted above and shown in a simplified isometric view in FIG. 1 most PSA tapes generally consist of a base film 11 and an adhesive layer 21 with a liner 31 and/or release layer 41 (typically polydimethylsiloxane {PDMS}). During application the liner 31 is removed and discarded. The adhesive layer 21 is bonded to the nozzle layer, using pressure, forming a seal. The adhesive layer is typically an elastomer mixture with large quantities of small molecular additives having a low molecular weight. The additives typically include plasticizers, tackifiers, polymerization catalysts, and curing agents. These low molecular weight additives are added primarily to change the glass transition temperature (T_g) of the material and to provide tack.

Since these additives are low in molecular weight compared to the polymer molecular weight they can both be leached out of the adhesive layer by the ink, react with ink components, or both, more easily than the polymer backbone. In either case, whether the low molecular weight material reacts with, or is leached out by the ink, the adhesive layer of the PSA tape is left with a weakened cohesive strength which can result in a residue being left behind when the tape is removed. In addition, the reaction between these low molecular weight

additives and ink components can also lead to the formation of precipitates or gelatinous materials, which can further result in clogging of the nozzles.

The interaction of these low molecular weight additives and the ink components can also give rise to a weakening of the base/adhesive film interface. Thus, if the strength of this interface is sufficiently degraded, the adhesive layer of the tape can remain on the print cartridge when the user attempts to pull the tape off before inserting the cartridge into the printer. The material compatibility of both the base film as well as the adhesive film is carefully chosen for each ink. The material compatibility of the ink/additive interactions as well as the general ink/polymer interactions should be considered. *Col. 2, ll. 22-col. 3, ll. 14.*

3. Organization of the Examiner's Obviousness Rejection

From the prosecution history, the Examiner relies on Reid to render obvious a leading edge of an encapsulant bead being a certain distance away from the nozzle holes of a nozzle plate. In various claims, this distance is less than about 500 microns (independent claims 1 and 26, and their progeny) or less than about 400 microns (independent claims 7 and 21, and their progeny). In the one-previous Office Action, the Examiner states "it would be obvious to . . . optimize this distance" for various purposes, such as "simplifying the manufacturing process" (*e.g.*, 3-1-06 Office Action, p. 4, ¶ numbered 7) or "covering the nozzle holes" (*e.g.*, 3-1-06 Office Action, p. 5, ¶ numbered 17). Alternatively, the Examiner relies on Reid for teaching a tape overlying nozzle holes for sealing the holes, but "not touching" the encapsulant bead. *See, e.g.*, 6-15-06 Final Office Action, p. 3, ¶ numbered 7. On both points, the Applicant traverses the rejections and requests reconsideration of the claims as originally presented. As is apparent below, this analysis is deficient.

Also, a detailed discussion of Farr is not required because all of the independent claims above stand or fall on the Examiner's characterization of Reid and its: (1) lack of

teaching regarding bead-to-nozzle-hole distances (much less a lack of teaching of shorter distances in comparison to the prior art); and (2) its touching (instead of “not touching”) of tape to encapsulant beads. Notwithstanding no discussion of Farr being required, Farr’s shortcomings are addressed below. Farr also teaches packaging tape, e.g., reference elements 200, 300, 400, 700, with the same tenting or lifting problems as Reid’s tape and never mentions encapsulant-bead-to-nozzle-hole distances.

- B. Both Reid and Farr faced the exact same problem as the present invention and proffered wholly disparate and unrelated solutions. They cannot now be said to render obvious a still other disparate solution not contemplated by either.**

Reid teaches a solution to the problem of “sealing nozzle holes in an inkjet printhead to prevent leakage of ink during shipping and storage.” Specifically, Reid recites a solution to the problem that packaging tape 26 tends to “pull ... away from the surface of the nozzle plate 16, as shown in FIG. 2C,” because of the tape’s “strong bond to [encapsulant] beads 20, being above the plane of the nozzle plate 16.” *Col. 1, ll. 65-68.*

Similarly, Farr teaches that tape applied over encapsulant beads causes tenting of the tape. Namely,:

a PSA tape applied over an irregular surface, such as a protrusion, a stepped structure or a discontinuous surface, can result in the gradual peeling or lifting of the PSA tape resulting in leakage, especially over longer periods of time. The gradual lifting can also result in the formation of an air pocket between the tape and the nozzle plate, allowing ink to flow into this region which will then react or corrode materials such as the encapsulant that protects the electrical traces. Ultimately this may lead to electrical shorts and the print cartridge may fail.” *Col. 2, ll. 35-44.*

In the Appellant's Specification, it is noted that:

With reference to Figure 1, a printhead 10 with a nozzle plate 12 typically has a packaging tape 14 covering the individual nozzle holes 16 of the plate to prevent ink leakage during shipping and handling. Unfortunately, with reference to Figure 2, the encapsulant beads 18 adjacent the nozzle plate regularly act as tent poles for the tape and, over time or immediately, cause the tape to lift off the nozzle plate in regions 20 and un-seal the nozzle holes 16. Eventually, this causes the printhead to leak. *Appellant's Specification*, p. 1, ll. 24-30.

Thus, each of Reid, Farr and the present invention recognize the problem of nozzle hole leaking caused by tenting or lifting of packaging tape by way of nearby encapsulant beads. However, the instant invention when faced with the problem does one of two things, or both. That is, the present invention alters the shape of its packaging tape so the tape does not touch the encapsulant beads (claims 6, 8-13, 15-20, 21-29) and/or moves encapsulant beads (in a range of at least less than about 500 microns) closer to the nozzle holes which is shorter than that heretofore known (claims 1-14, 16, 18, 21-29). Neither is intimidated by Reid or Farr alone or together.

Rather, Reid introduces slits into its packaging tape while all other aspects of the tape, the encapsulant beads, the nozzles, etc., remain in their same relative positions. Farr, on the other hand, introduces tapes with thermoplastic polymer films in lieu of PSA tape. As is clear, Reid and Farr avoid mentioning moving beads closer to nozzle holes and always touch tape to encapsulant beads.

For at least this reason, the claims define themselves over the art of record.

- C. Reid's tape 40 unequivocally touches the encapsulant bead 20 and cannot meet the limitations of claims 6, 8-13 and 15-29¹ requiring tape that avoids touching the encapsulant beads.**

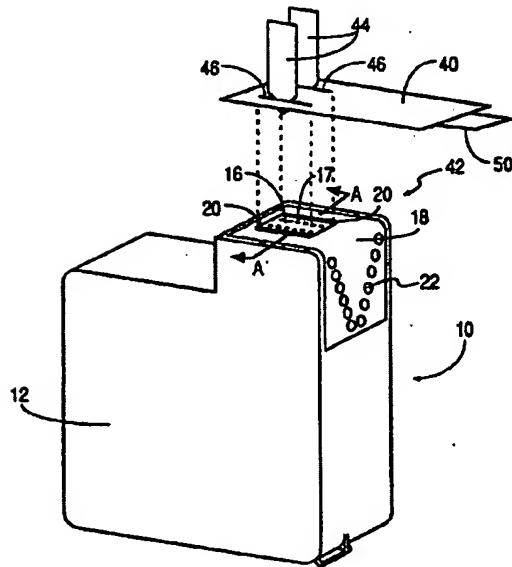


FIG. 3

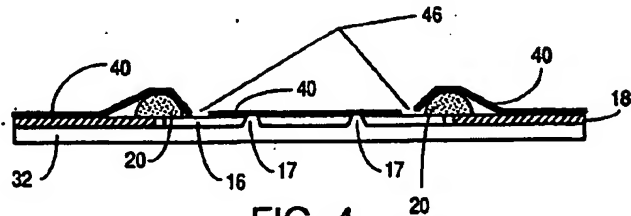


FIG. 4

REID's FIGURES 3 and 4

By the Examiner's rationale, Reid anticipates the claimed feature of "said tape not touching said encapsulant bead" because of the further recitation of the tape on a nozzle plate

¹ As before, some of these claims have already been indicated as allowable.

that “overlies”² or “covers”³ “each” of the nozzle holes of the nozzle plate. Specifically, the Examiner postures that the precise portion of Reid’s tape 40 that covers any of its nozzle holes 17 is physically remote from the encapsulant bead 20 and therefore cannot touch the encapsulant bead. This is seen from the characterization of her rejections and from her statements:

The claims state that the tape on the nozzle plate is not touching the encapsulant bead. The claims do not specify that the tape as a whole is not touching the encapsulant bead. [Reid’s] Figure 4 shows this best in that the tape that is on the nozzle plate is not touching the encapsulant bead [20]. 6-15-06 *Final Office Action*, p. 11, paragraphs numbered 49 and 50.

In other words, the Examiner contends two things. One, the claimed portion of the tape that does not touch the encapsulant bead is that which is physically on the nozzle plate covering the nozzle holes. Stated differently, tape or any other object cannot be in two places at the same time. In turn, if the tape covers the nozzle holes of the nozzle plate, it must also not touch the encapsulant bead because it is covering the nozzle holes. Two, that the claims must somehow contend that the “whole” of the tape or no portion of the does not touch the encapsulant bead. As seen below, this logic is faulty.

In the above-referenced claims, it is required to have a tape on a nozzle plate that (1) overlies or covers each of the nozzle holes and (2) that “does not touch” the encapsulant bead. According to the Examiner’s rationale, however, the claim is erroneously read to state that “the portion of the tape that covers each of the nozzle holes” is that which does not touch

² The selected language here may appear in any of the claims according to an “-ing” suffix. It is recited commonly here without the suffix as a convenience, but each actual claim language controls the scope of any individual claim.

³ *Id.*

the encapsulant bead. However, this view changes the claims to recite something not present in the claims. Naturally, many portions of packaging tape will not touch encapsulant beads because it is impossible for all exact portions of the tape to exist in two places at the same time. For instance, Reid's exact portion of tape 40 immediately overlying the nozzle holes 17, indeed, does not touch the encapsulant beads 20. The same is also true of the exact periphery of the tape 40. However, the claims are more broadly phrased and state that the tape itself does not touch the encapsulant bead, not just the exact portion overlying the nozzle hole. For at least this reason, claims 6, 8-13 and 15-29 are allowable over Reid. Of course, Farr's tape adds nothing to the discussion of patentability here because Farr's tape always and manifestly touches the encapsulant beads.

Alternatively, while Reid does show something not touching the encapsulant bead, what is not touching the encapsulant bead is the opening or the slit 46 in the tape. In other words, Reid's tape 40 touches the bead but the absence of tape (the slit 46) does not. However, the Applicant does not claim a slit (or absence of tape) not touching the encapsulant bead, but the tape itself. Precisely, each of the Applicant's claims 6, 8-13 and 15-29, directly or by dependence on another claim, recite the "tape" as "not touching" the encapsulant bead. In other words, the Applicant claims a tape that is not touching beads, while Reid shows a tape 40 always and manifestly touching the encapsulant bead 20. This cannot then anticipate or render obvious.

For at least this additional reason, the claims are patentable over Reid alone or in combination with Farr.

D. Reid's solution to the problem of tenting or lifting tape is to maintain the status quo for printhead structures, other than introducing tape slits 46, so that all other structures, e.g., encapsulant bead placement, size, etc., tape placement, size, etc., can remain conventional. In this manner, Reid offers an inexpensive solution without requiring chip or other changes to the printhead. In turn, Reid teaches away from claims 1-14, 16, 18, 21-29⁴ requiring encapsulant beads designed away from conventional printheads that exist closer toward nozzle holes in a range shorter than heretofore known of at least less than about 500 microns.⁵

The Examiner contends obviousness of claims requiring "optimized" close distances between the leading edge of the encapsulant bead and a closest one of the nozzles holes of the nozzle plate. As taught by Reid, however, "close alignment tolerances," such as those claimed in the instant invention, "are difficult to achieve" in "volume manufacturing." *Col. 2, ll. 15-16*. Thus, Reid teaches away from close tolerances in a chip in favor of putting slits 46 in conventionally sized sealing tape 40 for covering conventionally sized nozzle plates 16 and leaving all other structures of a printhead as the status quo. In this manner, Reid achieves "a tape that seals nozzles, does not lift up, and can be inexpensively and accurately applied in volume manufacturing." *Col. 2, ll. 17-19*. The instant invention, on the other

⁴ As before, some of these claims have already been indicated as allowable.

⁵ The 500 micron limitation here comes from claim 1. Other claims, however, recite it less than 500 microns and the actual distance is controlled by the particular claim recitation. Also, some claims, e.g., 9, alternatively recite distances between edges of the tape itself and a closest nozzle hole. Of course, this somewhat alters the analysis, but the argument still applies.

hand, recognizes that variously shaped packaging tape indeed "allow[s] encapsulant beads to occupy nozzle plate areas closer to nozzle holes than heretofore known. In turn, manufacturers can shrink the size of their heater chips and save on silicon costs." *Applicant's specification, page 2, lines 27-29.* Redesign of chips that move encapsulant bead position, however, is greatly expensive in contrast to Reid's viewpoint. Also, Figure 6C of the instant invention, and its attendant written description, teach the closest tolerances of chips heretofore known. For at least this reason, the claims are patentable over the art of record.

- E. Reid and Farr teach away from one another. Farr expressly disparages Reid by Patent Number and the Examiner now contends the combination of the two is obvious.**

From above, Farr specifically references Reid for its teaching of a poorly performing, pressure sensitive adhesive (PSA) tape, "(see for example U.S. Patent No. 5,414,454)." *Parenthesis in original, col. 1, ll: 37-38.* In turn, Farr mentions numerous problems of PSA tape, such as in the following:

Conventional PSA tapes on the other hand typically seal the inkjet nozzles using a pressure sensitive adhesive. The PSA tape is generally constructed of a base film with an acrylate based pressure sensitive adhesive layer used to seal the nozzles as shown schematically in FIG. 1. The base film is normally made of polyethylene terephthalate commonly referred to as polyester (PET) or polyvinyl Chloride (PVC). The use of thin PSA tapes has resulted in improving the resistance to environmental variation due to dimensional changes caused by temperature and humidity excursions. PSA tapes have also provided some improvement in durability in regards to vibration, thus, improving upon some of the problems associated with

capping devices. However, a PSA tape applied over an irregular surface, such as a protrusion, a stepped structure or a discontinuous surface, can result in the gradual peeling or lifting of the PSA tape resulting in leakage, especially over longer periods of time. The gradual lifting can also result in the formation of an air pocket between the tape and the nozzle plate, allowing ink to flow into this region which will then react or corrode materials such as the encapsulant that protects the electrical traces. Ultimately this may lead to electrical shorts and the print cartridge may fail. *Col. 2, ll. 22-44.*

It cannot now be said skilled artisans would be inclined to combine Farr with Reid and arrive at the claims of the instant invention. As the law provides, “[t]here is no suggestion to combine . . . if a reference teaches away from its combination with another source” *Tec Air, Inc. v. Denso Mfg. Mich. Inc.*, 192 F.3d 1353, 52 USPQ2d 1294, 1298 (Fed. Cir. 1999). The court has also noted, “as a ‘useful general rule,’ that references that teach away cannot serve to create a prima facie case of obviousness.” *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 60 USPQ2d 1001, 1010 (Fed. Cir. 2001)(quoting *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130 (Fed. Cir. 1994)). For at least this reason, the claims are patentable over the art of record.

F. The Examiner repeatedly cites *In re Boesch*, 617 F.2d 272, 205 USPQ2d 215 (CCPA 1980), and *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955), for suggesting optimized encapsulant bead to nozzle hole distances only involves only routine skill in the art. *E.g.*, 6-15-06 Final Office Action, pp. 2-3, paragraphs numbered 4 and 5. The precedent, however, is misapplied by the Examiner for want of any reference first disclosing or intimating any relative range.

As has long been known, the decision of *In re Boesch* stands for the notion that discovering an optimum value of a result effective variable involves only routine skill in the

art. However, the concept of "optimization" defined in *Boesch* relates strictly to the situation where the prior art actually (1) teaches a range and (2) the range overlaps that claimed in the patent application in issue. See *In re Boesch, supra* at 617 F.2d at 274 ("Each of the ranges of constituents in appellants' claimed alloys overlaps ranges disclosed [in the prior art].") (emphasis added). That is absolutely and completely different from the present situation wherein the cited prior art, Reid and Farr, never mention a range of any sort between encapsulant beads and closest nozzle holes, much less an optimized or overlapping range. Thus, *In re Boesch* is factually distinguishable and not controlling for this reason alone.

This very significant distinction between the present situation and the one before the court in the *Boesch* decision was set forth in the record during prosecution and ignored with the issuance of the final rejection. For instance, the Appellant previously argued the following:

the Applicant agrees with the Examiner that Reid does not disclose any distances between encapsulant beads and nozzle holes. However, skilled artisans will appreciate that Reid's solution to the problem of tape lifting off the nozzle holes relates exclusively to providing slits 46 in the sealing tape 40. As is unequivocal, Reid never discusses moving the encapsulant beads closer to the nozzle holes as the Applicant does with its micron-sized limitations in the claims. Rather, Reid keeps the same exact configuration of the prior art nozzle plate, nozzle holes and overlying encapsulant beads. Reid also keeps the same exact configuration as the prior art sealing tape, but for the slits 46 being carved therein. Thus, Reid does not change the size of sealing tape or move encapsulant beads closer to nozzle holes. Reid cannot then render obvious the Applicant's claims requiring distances of beads and nozzle holes, closer than the prior art, of less than about 400 and 500 microns. Keep in mind, as NMOS manufacturing gives way to CMOS manufacturing, heater chip sizes shrink and silicon savings are important. To this end, the Applicant saves on silicon by moving beads closer

to the nozzle holes and does so because they are not limited by the size of the sealing tape. This is antithetical to Reid which is described in the Applicant's specification in the background section at page 2, lines 9-10, whereby manufacturers "often create large-as-necessary distances d1, d2 [Figure 2, prior art] between the edge of the nozzle holes and the edge of the encapsulant bead." *Appellant's Amendment dated April 13, 2006*, paragraph bridging pages 11 and 12.

Also, the Examiner argues in support of the rejection of the claims at issue that "where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re aller, 105 USPQ 233." 6-15-06 *Final Office Action*, p. 3, paragraph numbered 5. While Appellant acknowledges that this is indeed the holding of the fifty plus year old decision cited, the Appellant mentions that neither Reid nor Farr disclose any ranges between encapsulant beads and nozzles holes much less why moving them closer to one another would help solve their respective problems at hand. To the extent Reid moved its encapsulant beads closer to its nozzle holes, regardless of being in a range of at least less than about 500 microns, Reid would lose its stated advantage of simply altering tape (by inserting slits) and achieving an inexpensive solution to the problem of tape tenting. To the extent Farr moved its encapsulant beads closer to its nozzle holes, regardless of being in a range of at least less than about 500 microns, Farr would further aggravate its problem of tape tenting, for it does not even disclose tape slits.

The instant invention, however, desires to move its encapsulant beads closer to nozzle holes (because of the luxury afforded by its shaped tape) so that silicon costs are save, and chips are made cheaper. Even *In re Aller* supports this proposition when conceded that "normally, it is to be expected that a change in temperature, or in concentration, or in both, would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new

and unexpected result which is different in kind and not merely in degree from the results of the prior art.” *In re Aller*, 105 USPQ at 235. In other words, the instant invention enables closer bead-to-nozzle-hole distances which enables smaller chips, which saves on silicon costs, which makes the present invention relatively cheaper to manufacture. Thus, the result here over either of Reid or Farr is a different kind of chip. Namely, a smaller and less expensively manufactured chip. For at least this reason, the claims are patentable over the art of record.

G. The Examiner Fails to Meet her Burden of Establishing Obviousness

As longstanding precedent, the initial burden of establishing a prima facie basis to deny patentability to a claimed invention on any ground is always on the examiner. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). However, it appears the Examiner’s legal position in the instant matter relates exclusively to Reid teaching/disclosing the entirety of all the rejected claim elements with the exception that it would be obvious to modify bead-to-nozzle-hole ranges. For several reasons, this rationale is flawed and insufficient.

First, the Examiner asserts the motivation to modify Reid is that discovering the optimum range only involves routine skill in the art. *6-15-06 Final Office Action*, p. 3, paragraph numbered 5. Reid, however, never mentions ranges, much less a desire to shrink or alter the size of its chip, as before. Therefore, it cannot be said that such is obvious and *In re Boesch* and *In re Aller* do not support the Examiner’s proposition.

Second, the Appellant agrees the law allows for examining the nature of the problem to be solved when determining motivation.⁶ However, the instant invention does not address

⁶ “A suggestion or motivation to modify prior art teachings may appear in the context of the public prior art, in the nature of the problem addressed by the invention, or even in the knowledge of one of ordinary skill in the art.”

solving a problem of optimizing bead-to-nozzle-hole ranges. Rather, the instant invention broadly relates to minimizing silicon costs by making silicon-intensive chips smaller. The ability of this is borne about by shrinking bead to nozzle hole distances, in turn, enabled by the Appellant's variously shaped tapes that do not touch the encapsulant beads, yet adequately sealing the nozzle holes from leaking. It is, therefore, overstated to simply characterize the nature of the problem to be solved as relating to "optimizing" various distances.

Third, the Examiner simply asserts that altering Reid into the present invention would be obvious. In other words, it is a scant assertion with little, if any, underlying support. Of course, just because an Examiner states it on the record, does not mean that it is true.

For at least these reasons, the Examiner has not met her burden and the claims are patentable over the art of record.

H. Conclusion

The Appellant submits that: (1) all claims are in a condition for allowance; (2) that Reid alone or in combination with Farr does not render the pending claims obvious; (3) that Reid and Farr are improperly combined thereby failing the obligation of a *prima facie* position; and (4) Reid does not meet any of the claimed limitations regarding bead-to-nozzle-hole distances or sealing tape avoiding touching encapsulant beads. It is respectfully requested that the rejections of the pending claims be reversed and the application remanded to the Examiner for allowance. To the extent any fees are due beyond those authorized in the fee transmittals for filing a Notice of Appeal and brief in support thereof, under 37 C.F.R.

Underlining added, Princeton Biochemicals, Inc. V. Beckman Coulter, Inc., 04-1493, 6/9/2005, 411 F.3d 1332 (Fed. Cir. 1995).

Application Serial No. 10/775,939
Appeal Brief dated September 21, 2006
Reply to Final Office Action dated June 15, 2006

§§41.20(b)(1) and (b)(2), respectively, the undersigned authorizes their deduction from
Deposit Account No. 11-0978.

Respectfully submitted,

KING & SCHICKLI, PLLC



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Date 9/21/06 by [Signature]

VIII. CLAIMS APPENDIX

Claims 1-29 are pending. The claims on appeal include 1-11, 13-18, 20, 21 and 23-25. Of those, all are original with the exception of claim 6 being previously presented. Claims 12, 19 and 22 have been indicated as allowable but rejected for dependence on a rejected base claims. Claims 26-29 have been allowed.

Listing of claims:

1. (Original) An inkjet printhead having a body, comprising:

a heater chip attached to said body;

a nozzle plate on said heater chip, said nozzle plate having a periphery and plurality of nozzle holes; and

an encapsulant bead on said nozzle plate having a leading edge in a direction away from said periphery, said leading edge being less than about 500 microns from a closest one of said plurality of nozzle holes.
2. (Original) The inkjet printhead of claim 1, wherein said leading edge is in a range from about 100 to about 400 microns from said closest one of said plurality of nozzle holes.
3. (Original) The inkjet printhead of claim 1, wherein said leading edge is in a range from about 200 to about 300 microns from said closest one of said plurality of nozzle holes.

4. (Original) The inkjet printhead of claim 1, wherein said encapsulant bead overlies a lead beam.

5. (Original) The inkjet printhead of claim 1, wherein said encapsulant bead overlies a TAB circuit.

6. (Previously Presented) The inkjet printhead of claim 1, further including a tape on said nozzle plate, said tape overlying each of said plurality of nozzle holes, said tape not touching said encapsulant bead.

7. (Original) An inkjet printhead having a body, comprising:
a heater chip on said body;

a nozzle plate on said heater chip, said nozzle plate having a periphery and plurality of nozzle holes; and

an encapsulant bead on said nozzle plate and overlying said periphery, said encapsulant bead having a leading edge in a direction away from said periphery and toward said plurality of nozzle holes, said leading edge being less than about 400 microns from a closest one of said plurality of nozzle holes.

8. (Original) The inkjet printhead of claim 7, further including a tape covering each of said plurality of nozzle holes, said tape not touching said encapsulant bead.
9. (Original) The inkjet printhead of claim 8, wherein an edge of said tape is more than about 50 microns from any of said plurality of nozzle holes.
10. (Original) The inkjet printhead of claim 9, wherein said leading edge is in a range from about 100 to about 350 microns from said edge of said tape.
11. (Original) The inkjet printhead of claim 10, wherein said tape is a two layer tape having poly vinyl chloride and acrylic.
12. (Original) The inkjet printhead of claim 8, wherein said tape has a narrow width portion shorter than a width of said nozzle plate.
13. (Original) The inkjet printhead of claim 8, wherein said tape attaches to said body.
14. (Original) The inkjet printhead of claim 7, wherein said leading edge is in a range from about 200 to about 300 microns from said closest one of said plurality of nozzle holes.

15. (Original) An inkjet printhead having a body, comprising:
- a heater chip on said body;
 - a nozzle plate on said heater chip, said nozzle plate having a plurality of nozzle holes;
 - an encapsulant bead on said nozzle plate; and
 - a tape on said nozzle plate covering each of said plurality of nozzle holes, said tape not touching said encapsulant bead.
16. (Original) The inkjet printhead of claim 15, wherein said encapsulant bead has a leading edge less than about 500 microns from said any of said plurality of nozzle holes.
17. (Original) The inkjet printhead of claim 15, wherein an edge of said tape is more than about 50 microns from a closest one of said plurality of nozzle holes.
18. (Original) The inkjet printhead of claim 15, wherein said encapsulant bead has a leading edge in a range from about 100 to about 350 microns from an edge of said tape.
19. (Original) The inkjet printhead of claim 15, wherein said tape has a narrow width portion shorter than a width of said nozzle plate.

20. (Original) The inkjet printhead of claim 15, wherein said tape attaches to said body.

21. (Original) An inkjet printhead having a body, comprising:

a heater chip on said body;

a nozzle plate on said heater chip, said nozzle plate having a periphery and plurality of nozzle holes;

an encapsulant bead on said nozzle plate and overlying said periphery, said encapsulant bead having a leading edge in a direction away from said periphery and toward said plurality of nozzle holes, said leading edge being less than about 400 microns in a distance perpendicular to said periphery from any of said plurality of nozzle holes; and

a tape on said body and said nozzle plate covering each of said plurality of nozzle holes, said tape not touching said encapsulant bead.

22. (Original) The inkjet printhead of claim 21, wherein said tape has a narrow width portion shorter than a width of said nozzle plate.

23. (Original) The inkjet printhead of claim 21, wherein said encapsulant bead has an irregular boundary relative to said periphery.

24. (Original) The inkjet printhead of claim 21, wherein said leading edge is in a range from about 100 to about 300 microns from said any of said plurality of nozzle holes.

25. (Original) The inkjet printhead of claim 21, wherein said leading edge is in a range from about 200 to about 300 microns from said any of said plurality of nozzle holes.

26. (Original) An inkjet printhead having a body, comprising:

a heater chip on said body;

a nozzle plate attached to said heater chip, said nozzle plate having a periphery and plurality of nozzle holes;

an encapsulant bead on said nozzle plate and overlying said periphery, said encapsulant bead having an irregular boundary with a leading edge extending in a direction away from said periphery and toward said plurality of nozzle holes, said leading edge being less than about 500 microns in a distance perpendicular to said periphery from any of said plurality of nozzle holes; and

a tape attached to said body and said nozzle plate covering each of said plurality of nozzle holes, said tape not touching said encapsulant bead, said tape having a narrow width portion shorter than a width of said nozzle plate.

27. (Original) The inkjet printhead of claim 26, wherein said tape further includes a wide

portion longer than said width of said nozzle plate.

28. (Original) The inkjet printhead of claim 27, wherein said tape has one of an hourglass and an oar shape.

29. (Original) The inkjet printhead of claim 26, wherein said tape has a substantially rectangular shape and no portion thereof exceeds said width of said nozzle plate.

Application Serial No. 10/775,939
Appeal Brief dated September 21, 2006
Reply to Final Office Action dated June 15, 2006

IX. EVIDENCE APPENDIX

None

Application Serial No. 10/775,939
Appeal Brief dated September 21, 2006
Reply to Final Office Action dated June 15, 2006

X. RELATED PROCEEDINGS APPENDIX

None



PTO/SB/17 (10-04v2)

Approved for use through 07/31/2008. OMB 0651-0032

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FEE TRANSMITTAL for FY 2005

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 500.00

Complete if Known

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Filing Date	February 10, 2004
First Named Inventor	Paul T. Spivey et al.
Examiner Name	Lisa Solomon
Art Unit	2861
Attorney Docket No.	2003-0705.02

METHOD OF PAYMENT (check all that apply)☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit
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Deposit
Account
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11-0978

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The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments☒ Charge any additional fee(s) or any underpayment of fee(s)☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	790	2001	395	Utility filing fee	
1002	350	2002	175	Design filing fee	
1003	550	2003	275	Plant filing fee	
1004	790	2004	395	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1)					(\$)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below		Fee Paid
Total Claims	<input type="text"/>	-20** =	<input type="text"/>	X	<input type="text"/>	<input type="text"/>
Independent Claims	<input type="text"/>	-3** =	<input type="text"/>	X	<input type="text"/>	<input type="text"/>
Multiple Dependent	<input type="text"/>				<input type="text"/>	<input type="text"/>

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	18	2202	9	Claims in excess of 20
1201	88	2201	44	Independent claims in excess of 3
1203	300	2203	150	Multiple dependent claim, if not paid
1204	88	2204	44	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)**3. ADDITIONAL FEES**

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for <i>ex parte</i> reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	430	2252	215	Extension for reply within second month	
1253	980	2253	490	Extension for reply within third month	
1254	1,530	2254	765	Extension for reply within fourth month	
1255	2,080	2255	1,040	Extension for reply within fifth month	
1401	340	2401	170	Notice of Appeal	
1402	340	2402	170	Filing a brief in support of an appeal	500.00
1403	300	2403	150	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,370	2453	685	Petition to revive - unintentional	
1501	1,370	2501	685	Utility issue fee (or reissue)	
1502	490	2502	245	Design issue fee	
1503	660	2503	330	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	790	2809	395	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR 1.129(b))	
1801	790	2801	395	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 500.00

SUBMITTED BY

(Complete if applicable)

Name (Print/Type)

Michael T. Sanderson

Registration No.

43,082

Telephone 859.252.0889

Signature

Date

9-21-06

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